Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY – SECOND PAPER

NOVEMBER 2009

MEMORANDUM

MARKS: **100**

TIME: **2½ hours**

SYMBOL	EXPLANATION
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
S	Simplification
RT / RG	Reading from a table / graph
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty: e.g. for: no units, incorrect rounding off etc.
R	Rounding off

This memorandum consists of 7 pages.

QUESTION 1[23]

Ques	AS	Solution	Explanation
1.1	11.1.1	$\frac{\text{R}249,56}{2} = \text{R}124,78$ ✓✓	(M) Method(1) (A) Accuracy(1)
1.2	11.1.2	R87,60 x 2 ✓M = R175,20 ✓A	(M) Method(1) (A) Accuracy(1)
1.3	11.1.2	R4859,73 – R3407,62 ✓M =1452,11 ✓A R1452,11 x 12 ✓M = R17 425,32 ✓A	(M) Method(1) (A) Accuracy(1) (M) Method(1) (A) Accuracy(1)
1.4	11.1.1	R3532,04 + R2182,00 + R4859,73 + R249,56 + R175,20✓✓MA (adding all the amounts) = R10 998,53✓A	(MA) Method with Accuracy (2) (A) Accuracy(1)
1.5	11.1.1	Total Net income = Total earnings – Total deductions = 24 664,14 – 10 998,53 ✓M =R13 665,61✓A	(M) Method(1) (A) Accuracy(1)
1.6	11.1.2	R20 044,14 + 1000 + 3407,62 +124,78 + 87,60✓ ✓MA = R24 664,14 ✓A Agree with Mrs Ntaka. ✓O The amount shown on her salary slip is not correct. ✓J	(M) Method with Accuracy (2) (A) Accuracy(1) (O) Opinion(1) (J) Justification (1)
1.7	11.1.3	R20 044,14 + (20 044,14 x 0,085) ✓MA = R20 044,14 + 1703,75 = R21 747,89 ✓A	(M) Method with Accuracy (1) (A) Accuracy(1)
1.8	11.1.3	$\frac{3532,04}{21044,14} \times 100$ ✓✓ MA = 16,78 % ✓A	(MA) Method with accuracy(2) (A)Accuracy(1)

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QUESTION 2[13]

2.1	11.2.1	Annual fees = R2 250 x 4 = R9000 per yr ✓M	(M) Method (1)
		Increase in fees:2009 = R9000 +(10% of 9000) ✓M = 9000 + 900 = R9 900 ✓CA Increase for 2010= R9 900 + (10% of 9 900) = R9 900 +990 = R10 890 ✓A	(M) Method (1) (A) Consistent Accuracy (1) (A) Accuracy(1)
		OR A= $P(1+i)^n$✓F = R9000 $(1,1)^2$ ✓ ✓SF = R10890✓	
2.2	11.2.1	In 2010 projected income= R10 890 x (90% of 450)✓M = R10 890 x 405 ✓CA = R4 410 450 x 0,05✓M = R220 522,50 ✓A	(M) Method(1) (CA) Consistent Accuracy(1) (M) Method (1) (A) Accuracy(1)
2.3	11.2.1	A= $P(1+i)^n$✓F = 25 000$(1,08)^3$ ✓✓✓SF = R31 492,80 ✓A = R31 500 (nearest hundred rand)	(F) Choosing formula(1) (SF) Substituting into the formula (3) (A) Accuracy(1)
		OR 2008 = (25 000 x 1,08) ✓SF = R27 000 ✓MA 2009 = (27 000 x 1,08) = R29 160 ✓MA 2010 = (29 160 x 1,08) = R31 492,80 ✓A = R31 493 ✓R = R31 500	(SF) Substitution(1) (MA) Method with accuracy(2) (A) Accuracy (1) (R) Rounding(1)
			[13]

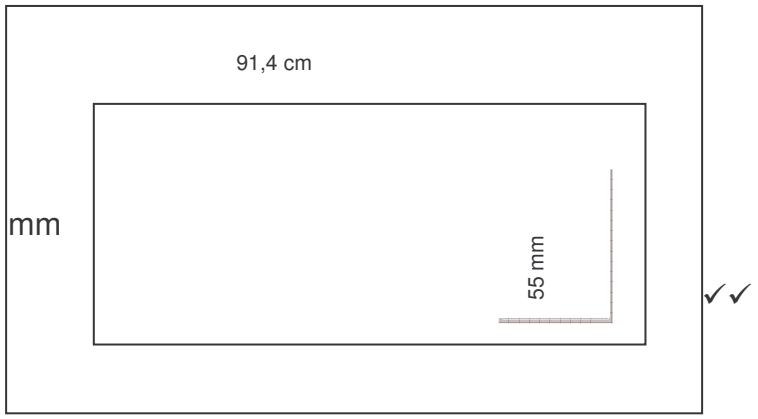
QUESTION 3[36]

3.1 11.3.1 $A = 5027\ m^2$
$L = \frac{5027}{55}$ ✓✓MA
$= 91,4$ m ✓A
(MA) Method with Accuracy(2)
(A) Accuracy (1)

3.2 11.3.1 Length = 91,4 m
Centre Line = $\frac{91,4}{2}$ ✓M
$= 45,7$ m ✓A
(M) Method (1)
(A) Accuracy (1)

3.3.1 11.3.3 Length = 91,4 + (2 x 5)
= 91,4 + 10 ✓MA
= 101,4 m ✓A
Breadth = 55 + (2 x 4)
= 55 + 8✓MA
= 63 m ✓A
(MA) Method with Accuracy(1)
(A) Accuracy (1)
(MA) Method with Accuracy (1)
(A) Accuracy(1)

3.3.2 11.3.3



✓✓
101,4 mm✓✓
(M) Method with Accuracy (4)

3.3.3 11.3.1 P = 2(*l+b)*
= 2(101,4 + 63)✓M
= 2(164,4)
= 328,8
= 329 m ✓A
(M) Method(1)
(A) Accuracy(1)

3.4.1 11.3.1 Area of the larger rectangle – Area of smaller rectangle✓MA
(101,4 x 63) – (91,4 x 55) ✓CA
6388,2 – 5027
= 1361,2 ✓A
= 1362 m ✓R
(MA) Method with Accuracy (1)
(CA) Consistent Accuracy (1)
(A) Accuracy(1)
(R) Rounding (1)

3.4.2	11.3.3	To make it easier for players and umpires to distinguish sections on the field. ✓O **OR** Any other logical answer.	(O) Opinion(1)
3.4.3	11.3.3	Yes. ✓O The sand-based surface would not require watering like the water-based surface. The school would therefore save on water. ✓J	(O) Opinion(1) (J) Justification (1)
3.5.1	11.3.1	C= $2\pi r$ C= $\frac{2\times 3,14\times 14,63}{2}$ ✓MA C= 3,14 x 14,63 ✓CA C = 45,9382 m = 45,94 m ✓A	(MA) Method with Accuracy (1) (CA) Consistent Accuracy (1) (A) Accuracy(1)
3.5.2	11.3.1	$C_{larger\ semi\text{-}circle}$= 61,64 ✓M r = $\frac{61,64}{3,14}$ ✓MA = 19,63 m ✓A	(M) Method(1) (MA) Method with Accuracy (1) (A) Accuracy(1)
3.6	11.3.1	(Perimeter of field + Three lines across the field + 2 semi-circles) x 0,1 m✓M 2(91,4 + 55) ✓SF + 3(55) ✓SF + 2(45,94) x 0,1 ✓SF 54,968 m^2 ✓CA 55 m^2 (Rounded off) ✓R	(M) Method(1) (SF) Substitution(3) (CA) Consistent Accuracy(1) (R) Rounding(1)
3.7	11.3.1	$\frac{55}{23}=2,39$ ✓MA = 3 litres ✓A	(MA) Method with Accuracy(1) (A) Accuracy (1)

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QUESTION 4[18]

4.1	11.4.3	Mathematics = $\frac{54+57+59+55+56+61+63+54+56+62)}{10}$ $= \frac{577}{10}$ = 57,7% ✓MA	(MA) Method with Accuracy(1)
		Math Lit = $\frac{67+63+61+69+66+65+64+69+70+62}{10}$ $= \frac{656}{10}$ = 65,6 % ✓MA	(MA) Method with Accuracy (1)
		The Mathematical Literacy mean is better. ✓O	(O) Opinion(1)
4.2.1	11.4.3	Median Math: 54 54 55 56 <u>56 57</u> 59 61 62 63 ✓M $\frac{56+57}{2}$ ✓MA = 56,5 ✓A	(M) Method or arranging for both sets of data(1) (MA) Method with Accuracy(1) (A) Accuracy (1)
		Median Math Lit: 61 62 63 64 <u>65 66</u> 67 69 69 70 $\frac{65+66}{2}$ ✓MA = 65,5 ✓A	(MA) Method with Accuracy(1) (A) Accuracy (1)
4.2.2	11.4.3	Mode: Math = 54 ✓A	(A) Accuracy(1)
		Mode: Math Lit = 69 ✓A	(A) Accuracy(1)
4.3	11.4.3	Mathematical Literacy. ✓O The Averages, medians and modes of Mathematical Literacy are higher than that of Mathematics. ✓J	(O) Opinion(1) (J) Justification (1)
4.4	11.4.3	54 54 **55** 56 <u>56 57</u> 59 **61** 62 63 Lower quartile = 55 ✓MA Upper quartile = 61 ✓MA	(MA) Method with Accuracy(2)
4.5.1	11.4.3	30%	Accuracy (1)
4.5.2	11.4.3	F; G; J	Accuracy (3)

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QUESTION 5[10]

5.1	11.4.2	Seven wickets ✓A	(A) Accuracy (1)
5.2	11.4.2	The 10^{th} over ✓A	(A) Accuracy (1)
5.3	11.4.1	South Africa ✓A 8 wickets were lost ✓A	(A) Accuracy (2)
5.4	11.4.1	Pakistan. ✓A They lost fewer wickets and the graph shows that they scored more runs. ✓J	(A) Accuracy (1) (J) Justification (1)
5.5	11.4.1	40 overs in total ✓A	(A) Accuracy (1)
5.6	11.4.1	Average run rate = $\frac{\text{runs}}{\text{overs}}$ = $\frac{145}{20}$ ✓MA = 7,25 runs per over ✓A	(MA) Method with Accuracy(1) (A) Accuracy (1)

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TOTAL: 100